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REMARKS

This is a full and timely response to the non-final Official Action mailed July 17, 2006. Reconsideration of the application in light of the above amendments and the following remarks is respectfully requested.

Claim Status:

Claims 1-48 were withdrawn from consideration under a previous Restriction Requirement and have been cancelled herein to expedite the prosecution of this application. The withdrawn claims are cancelled without prejudice or disclaimer. Applicant reserves the right to file any number of continuation or divisional applications to the withdrawn claims or to any other subject matter described in the present application.

By the forgoing amendment, the specification and various claims have been amended.

New claims 68-84 have been added. Thus, claims 49-84 are currently pending for further action.

Specification:

The recent Office Action objects to the specification because it is allegedly unclear what is meant by the terms "single chamber" and "dual chamber" used throughout the specification. (Action of 7/17/06, p. 2). This objection is respectfully traversed for at least the following reasons.

The terms "single chamber" and "dual chamber" are well-defined and widely understood in the fuel cell art. In a dual chamber fuel cell, the fuel and the anode are sealed in a first chamber separate from the oxidant and cathode which are sealed in a second

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chamber. In a single chamber fuel cell, the fuel and oxidant are allowed to mix and the mixture is supplied to both the anode and cathode. This commonly-understood distinction is referenced and described in, for example, paragraphs 0026 and 0027 of the specification and illustrated in, for example, Figs. 11 (dual chamber) and 12 (single chamber).

Thus, it is entirely unclear why one of skill in the art would have any confusion regarding the description of both single chamber and dual chamber fuel cell configurations in Applicant's specification. Therefore, the objection to the specification is entirely without merit and should be reconsidered and withdrawn.

Prior Art:

Claims 49 and 50 were rejected as being anticipated under 35 U.S.C. § 102(b) by U.S. Patent No. 3,503,808 to Agruss et al. ("Agruss"). For at least the following reasons, this rejection is respectfully traversed.

Claim 49 now recites "A fuel cell comprising: a *ceramic* support substrate supporting a cathode, anode and electrolyte; and a plurality of pores formed through said substrate, said pores having a size that varies in diameter along a thickness of said substrate." (Emphasis added). In contrast, Agruss clearly does not teach or suggest a fuel cell with a ceramic support substrate having pores with a size that varies in diameter through a thickness of the substrate.

"A claim is anticipated [under 35 U.S.C. § 102] only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987) (emphasis added). See M.P.E.P. § 2131. For at least this reason, the rejection of claims 49 and 50 should be reconsidered and withdrawn.

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Applicant notes that, in relation to *other* rejected claims, the Office has cited U.S. Patent App. Pub. No. 2002/01422414 to Pekala et al. ("Pekala") as teaching pores that vary in diameter through a thickness of a substrate. (Action of 7/17/06, p. 4). However, it must be noted that Pekala teaches such pores in a polyethylene web (Pekala, paragraph 0005 and 0024), not in a ceramic support substrate as recited in claim 49. There is no prior art of record, taken alone or in combination, that teaches or suggests the *ceramic* support substrate having pores that vary in diameter through a thickness of the substrate as recited in claim 49. Moreover, the prior art cited would not teach or enable one of ordinary skill in the art to produce such a porous ceramic substrate. For at least these reasons, claims 49 and 50 appear to be patentable over the prior art presently of record.

Claims 58 and 59 were rejected as being unpatentable under 35 U.S.C. § 103(a) over the teachings of Agruss taken alone. For at least the following reasons, this rejection is also respectfully traversed.

Claim 58 now recites:

An apparatus comprising:  
a fuel cell configured for providing power, said fuel cell comprising:  
a support substrate supporting *a solid cathode material* deposited on a first side of said substrate, *a solid anode material* deposited on a second side of said substrate and an electrolyte; and  
*a plurality of pores formed through said substrate, said pores having a size and shape formed in accordance with a pre-selected desired porosity.*  
(Emphasis added).

In contrast, Agruss fails to teach or suggest the claimed porous substrate supporting a *solid* cathode material and a *solid* anode material. In this regard, reference is made to Applicant's originally-filed specification at, for example, paragraph 0039.

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To the contrary, Agruss teaches away from this subject matter with a very different fuel cell chemistry in which the electrodes are liquid. (Agruss, col. 2, lines 25-30).

"To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)." M.P.E.P. § 2143.03. Accord. M.P.E.P. § 706.02(j). For at least these reasons, the rejection of claims 58 and 59 should be reconsidered and withdrawn.

Claims 51-54, 57, 60-64 and 67 were rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Agruss and Pekala. For at least the following reasons, this rejection is respectfully traversed.

Claim 51 recites: "A fuel cell comprising: a support substrate supporting a cathode, anode and electrolyte; and a plurality of pores formed through said substrate, wherein said pores vary in diameter by tapering to a narrow point between two openings, both openings being larger than said narrow point." In contrast, the combination of Agruss and Pekala does not teach or suggest a fuel cell with a porous support substrate in which "said pores vary in diameter by tapering to a narrow point between two openings, both openings being larger than said narrow point." This subject matter is illustrated, for example, in Figs. 6 and 7 of the Applicant's originally-filed specification.

"To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)." M.P.E.P. § 2143.03. Accord. M.P.E.P. § 706.02(j). For at least these reasons, the rejection of claim 51 should be reconsidered and withdrawn.

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Claims 55 and 57 recite, respectively, "wherein said pores are substantially uniform in size and shape" and "a second plurality of substantially uniform pores formed through said substrate wherein an average size of said second plurality of pores is smaller than said first plurality of pores." In contrast, the combination of Agruss and Pekala does not teach or suggest two sets of pores, both being substantially uniform in shape and size, the pores of one set being smaller than the pores of the other set. For at least these additional reasons, the rejection of claims 55 and 57 should be reconsidered and withdrawn.

Claims 55, 56, 65 and 66 were rejected under 35 U.S.C. § 103(a) in view of the combined teachings of Agruss, Pekala and Mardilovich (a non-patent publication of record). This rejection is respectfully traversed for at least the same reasons given above with respect to the independent claims.

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Conclusion:

The newly added claims are thought to be patentable over the prior art of record for at least the same reasons given above with respect to the original independent claims. Therefore, examination and allowance of the newly added claims is respectfully requested.

For the foregoing reasons, the present application is thought to be clearly in condition for allowance. Accordingly, favorable reconsideration of the application in light of these remarks is courteously solicited. If the Examiner has any comments or suggestions which could place this application in even better form, the Examiner is requested to telephone the undersigned attorney at the number listed below.

Respectfully submitted,



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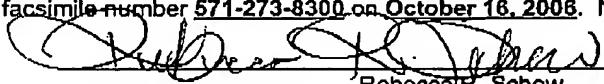
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